

Application Number 10/521871  
Response to the Office Action dated August 18, 2008

### **REMARKS**

Favorable reconsideration of this application is requested in view of the following remarks.

Claim 1 has been amended to include a limitation of "water repellent" to a substance provided on a face of the organic layer as supported by Fig. 15 and the specification at page 25, lines 17-26 in addition to editorial revisions.

Claims 34 and 35 has been added as supported by Fig. 15 and the specification at page 25, lines 17-27 and 31-32, and claim 35 is further supported by the specification at page 26, lines 4-6.

Claims 3, 6, 12, 14, 17, 20, 25, 26, 31 and 32 have been amended editorially.

Claims 1-5, 7, 9, 12, 17-22, 24, and 28-32 have been rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al. (Japanese Patent Application Publication No. 2002-203576). Applicants respectfully traverse this rejection.

Suzuki discloses an electrolyte membrane (30) that includes a membrane supporting substrate (32), i.e., a base material, and an ion-conductive substance (34) (see Fig. 2 and para. [0053] at page 8 of the translation). The reference further discloses a body (20) including the electrolyte membrane, an anode (40a), and a cathode (40b) (see Fig. 2 and *id.* para. [0052] at page 8) and that each anode and cathode includes a diffusion layer (42a and 42b) and a catalyst layer (44a and 44b) that is coated with a hydrophobic layer (52a and 52b), respectively, (see Fig. 2 and *id.* paras. [0028] and [0054] at pages 5 and 8, respectively). Accordingly, the hydrophobic layer of the reference is provided between the catalyst layer and the diffusion layer and is not provided on the organic layer formed on an inner surface of the base material, i.e., the hydrophobic layer is not facing an inner portion of the through holes as claim 1 requires. The structure of the reference is

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designed so that the hydrophobic layer inhibits movement of water generated during a cell reaction toward the diffusion layer, and that the water returns to the electrolyte membrane and is reused (see *id.* paras. [0028]-[0029] at page 5). In contrast, claim 1 requires that the water repellent substance be provided within the through holes formed in the base material and on a side of the organic layer facing an inner side of the through hole and that the water repellent substance fill gaps in the inner portion of the through holes. By filling the gaps in the inner portion of the through hole by the substance, the structure of the inner portion of the through hole becomes finer and cross-over of fuel can be suppressed (see page 25, lines 17-24 of the specification). Also, in claims 34 and 35, the substance is provided in the inner portion of the through hole in a same way as that in claim 1. Thus, Suzuki fails to disclose or even suggest the structure of claims 1, 34, and 35, and this rejection should be withdrawn.

Claims 1-9, 12, 21-26, and 28-33 have been rejected under 35 U.S.C. 102(b) as being anticipated by Yamaguchi et al. (Japanese Patent Application Publication No. 2002-083612). Applicants respectfully traverse this rejection.

Yamaguchi discloses a first polymer and a second polymer to be filled in holes of a porous base material, and the first and second polymers are both proton-conductive polymers, i.e., ion-conductive polymers (see para. [0009] at page 2 of the translation). The reference further discloses that a monomer for the second polymer may be the same as that for the first polymer or different, i.e., one or two or more monomers are selected for the second polymer from a list in para. [0040] (see *id.* at page 6) and vinyl sulfonic acid (see *id.* para. [0054] at page 8). The reference also discloses that the first monomer and the first polymer include an ion-exchange group (see *id.* para. [0036] at pages 5-6). Accordingly, the second monomer and the second polymer include the ion-exchange group, i.e., hydrophilic groups. Apparently, the monomers listed in para. [0040] (see *id.* at page 6) and vinyl sulfonic acid are hydrophilic monomers. Thus, the reference fails to disclose that the substance is provided on the first polymer layer at a side facing the inner portion of the hole and is a water repellent material as claim 1 requires. As discussed above, by filling the gaps in the inner portion of the through hole by the substance, the

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structure of the inner portion of the through hole becomes finer and cross-over of fuel can be suppressed (see page 25, lines 17-24 of the specification). Further, Yamaguchi discloses acrylic acid (para. [0075] at page 11) and a combination of acrylic acid : vinyl sulfonic acid = 2:1 (para. [0077] at page 11) as monomers used for the second polymer in addition to the monomers for the first polymer listed in para. [0040], and fails to disclose an inorganic substance in claim 34 or materials listed in claim 35 as the monomers for the second polymer. The reference includes 0.1 weight section of divinyl benzene as a cross-linking agent in the second polymer of acrylic acid (para. [0075] at page 11), but does not disclose the second polymer made of divinyl benzene monomer. Accordingly, claims 1, 34, and 35 are distinguished from Yamaguchi, and this rejection should be withdrawn.

Claims 11 and 13-14 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (Japanese Patent Application Publication No. 2002-203576) and unpatentable over Yamaguchi et al. (Japanese Patent Application Publication No. 2002-083612) in view of Yamada (U.S. Patent No. 5,213,910). Applicants respectfully traverse this rejection.

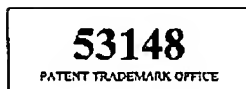
Claim 1 and accordingly, claims 11 and 13-14 are distinguished from Suzuki and Yamaguchi as discussed above.

Yamada discloses a solid electrolyte type fuel cell that included a fuel electrode film, a solid electrolyte film, and an air electrode film and that these three layers are laminated (see coln. 4, lines 40-42, coln. 7, lines 10-13, and Fig. 9), and Yamada does not disclose a substance provided on an organic layer at a side facing an inner portion of a through hole of the solid electrolyte film as claims 1, 34, and 35 require. As discussed above, by filling the gaps in the inner portion of the through hole by the substance, the structure of the inner portion of the through hole becomes finer and cross-over of fuel can be suppressed (see page 25, lines 17-24 of the specification). Thus, Yamada does not remedy the deficiencies of Suzuki and Yamaguchi.

Accordingly, claims 11 and 13-14 are distinguished from Suzuki and Yamaguchi in view of Yamada, and this rejection should be withdrawn.

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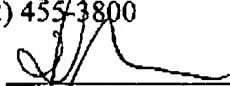
In view of the above, Applicants request reconsideration of the application in the form of a Notice of Allowance.



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Respectfully submitted,

HAMRE, SCHUMANN, MUELLER &  
LARSON, P.C.  
P.O. Box 2902  
Minneapolis, MN 55402-0902  
(612) 455-3800

By:   
Douglas P. Mueller  
Reg. No. 30,300  
DPM/my/ad